PULP & PAPER INDUSTRY PERSPECTIVE ON NO2 AND SO2 MODELING METHODS

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- The American Forest & Paper Association is the national trade association of the forest products industry, representing pulp, paper, packaging and wood products manufacturers, and forest landowners.
- The forest products industry accounts for approximately 5 percent of the total U.S. manufacturing GDP. Industry companies produce about $190 billion in products annually and employ nearly 900,000 men and women, exceeding employment levels in the automotive, chemicals and plastics industries.
- The industry meets a payroll of approximately $50 billion annually and is among the top 10 manufacturing sector employers in 47 states.

Industry Perspective

- Pulp & paper mills are "major sources" but generally well-controlled industrial operations
- Heavily regulated sector…past, present, and future
  - Industrial Boilers (NSPS Subparts D*x* , Boiler MACT)
  - Chemical Recovery (NSPS Subpart BB, SIP standards)
  - Boiler MACT
  - BART/Regional Haze
  - Residual Risk/Technology Review

Challenges

- Like many industrial sectors, pulp & paper mills find it difficult to demonstrate compliance with applicable NAAQS ***following current EPA modeling guidance*** resulting in numerous consequences…
  - New projects cannot move forward until modeling issues are resolved
  - Existing operations without projects may be required to evaluate controls as part of SO2 SIP Development and Implementation
  - "Better than BACT" *levels of control* may be necessary to demonstrate compliance, which may require…
    - …significant capital investments in new or upgraded controls
    - …"on-paper" reductions to permit limits
    - …reduced fuels/operational flexibility

AIWG Sector Findings

Source	Type	SO_2 (g/s)	Stack ht 1 (m)	Stack temperature (K)	Stack velocity (m/s)	Diameter (m)	Stack ht 2 (m)	Stack ht 3 (m)	SO_2 2 (g/s)
C0001	POINT	2	30	350	13	1.3	45	65	2
C0002	POINT	8	30	340	7	1.4	45	65	8
C0003	POINT	7	29	350	7	2	45	65	7
C0004	POINT	28	85	460	12	5	120	120	8
C0005	POINT	28	85	460	12	5	120	120	8
C0006	POINT	5	72	440	17	2.5	120	120	5
C0007	POINT	5	72	440	17	2.5	120	120	5
C0008	POINT	14	76	350	12	4	120	120	3
C0009	POINT	0.5	8	483	0	0.4	8	8	0.5
C0010	POINT	0.2	67	350	9	1	67	67	0.2
C0011	POINT	0.2	67	350	9	1	67	67	0.2

Total = 97.9 g/s
777 lb/hr

Total = 46.9 g/s
372 lb/hr

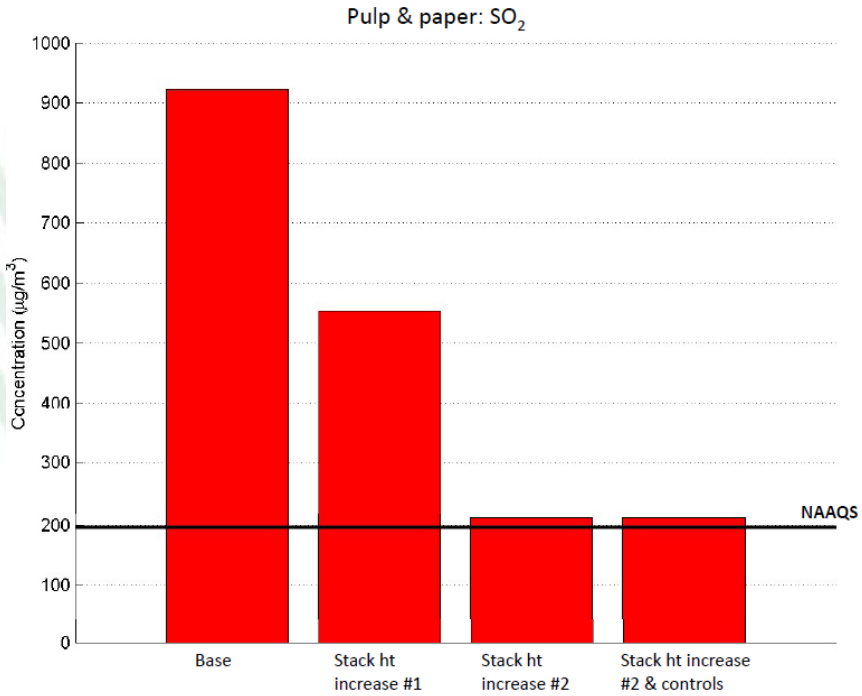

Table 3. SO_2 modeling results.

Facility	Emissions (tpy)	Maximum DV (µg/m^3) (ppb)	Sensitivity test	Maximum DV (µg/m^3) (ppb)	Comments
Pulp & paper	Base: 3,403	924 (353); 28% receptors exceed	Stack height increase & controls; Emissions 1,630	212 (81); < 1% receptors violate;	Exceedances < 4 km for base case; Exceedances < 1 km for stack ht increase & controls

http://www.epa.gov/ttn/scram/10thmodconf/review_material/AIWG_Summary.pdf

SO2 Impacts

- AF&PA analyses suggest SO2 impacts generally below the standard for typical mills

SO2 H4H - No Background				
Scenario	**Value**	**Mill A**	**Mill B**	**Mill C**
Emission Rate	SO2 lb/hr	96.60	866.06	280.20
24-hour Current	H2H	97.24	171.42	53.95
3-hour Current	H2H	116.62	381.06	121.52
1-hour Current	H4H	108.14	440.04	118.96
1-hour BACT	H4H	108.14	78.09	100.98

  - Even sources at 50% or less than 3-hour/24-hour SO2 NAAQS can be > 2x 1-hour SO2 NAAQS
  - AF&PA recommends variable emissions processing to account for fuel/operational flexibility (i.e., coal vs. biomass)
  - Tier 3 background methods likely to be important for attainment demonstrations

NO2 Impacts

- AF&PA analyses suggest NO2 impacts generally below the standard – but Tier 3 methods likely routinely needed

NO2 H8H - No Background				
Scenario	**Value**	**Mill A**	**Mill B**	**Mill C**
Emission Rate	NOX lb/hr	333.10	500.80	485.10
1-hour Current	Tier 2 (80% ARM) H8H	367.93	452.62	103.64
1-hour Current	Tier 3 (OLM) H8H	87.30	90.70	67.99
1-hour Current	Tier 3 (PVMRM) H8H	51.88	77.14	46.06

  - Typical pulp mill combustion sources have NO2/NOX in-stack ratio of approximately 2%
  - AF&PA recommends streamlined Tier 3 NO2 modeling
    - Updated PVMRM/OLM algorithms
    - Authority to approve at state/local level
    - Availability of QA'd background concentrations (O3, NO2) needed for Tier 3 models and Paired Sums

Observations / Comments

- AF&PA analyses suggest AIWG study may overstate pulp & paper industry impacts
- AF&PA appreciates efforts to…
  - …improve upon Tier 3 NO2 models
  - …identify and correct systematic deficiencies in model performance
- AF&PA promotes reasonable, practical implementation of new standards and modeling guidance
  - Critical application of EPA guidance in practice to provide stability during regulatory implementation periods
  - Revisit traditional approaches (ambient air, variable emissions)
  - Streamlined approval of Tier 3 approaches